



NEOCARE

RPPG BASED NEONATAL HEALTH MONITORING SYSTEM

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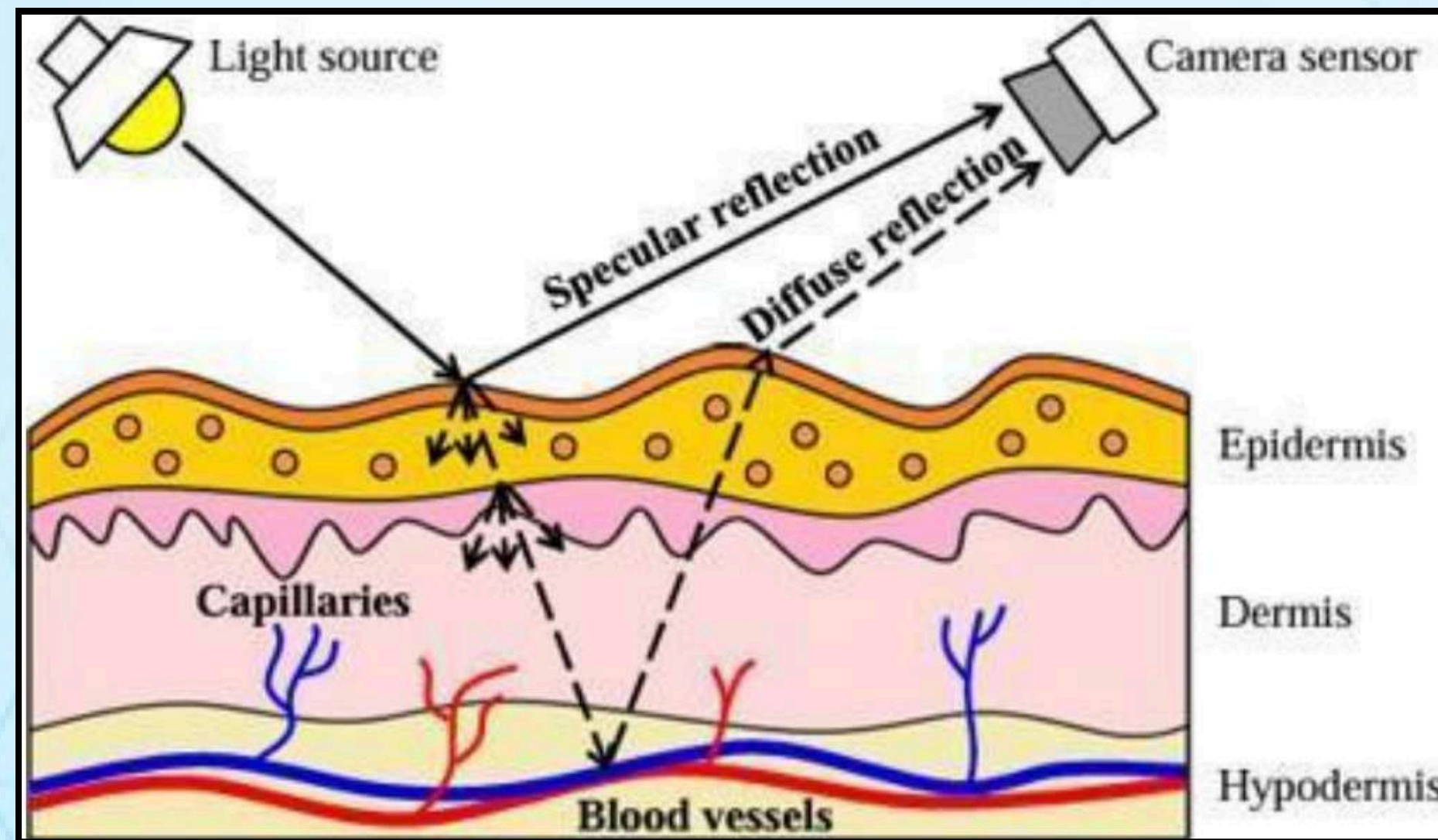


THE UNIVERSITY OF
SYDNEY



What is RPPG ?

Remote Photoplethysmography is a contactless method to measure vital signs by tracking skin color changes from blood flow.



PREVIOUS TEAM

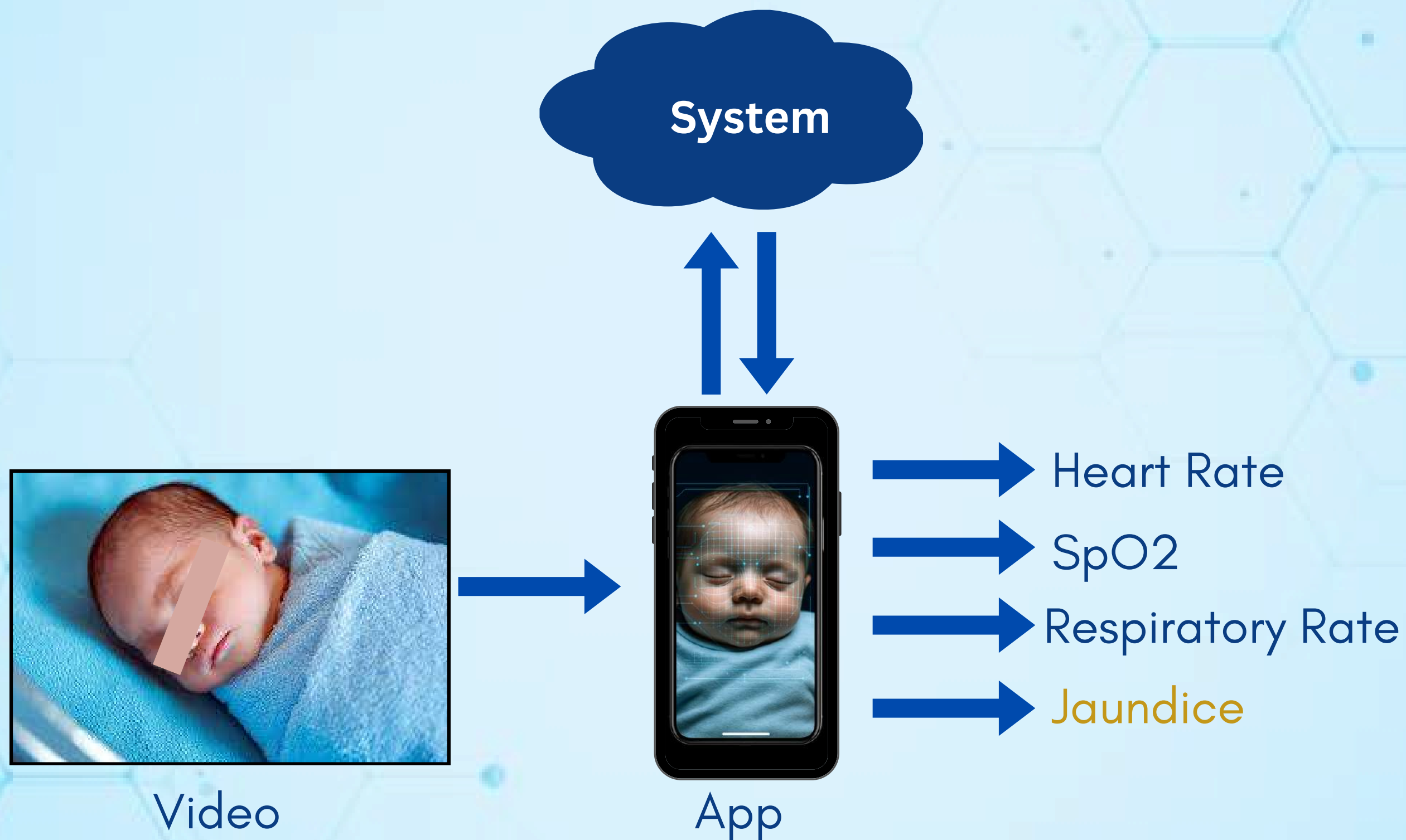


Neonatal Heart Rate Estimation Algorithm

Neonatal SpO2 Level Estimation Algorithm

Neonatal Facial Video Dataset

PROPOSED APPROACH



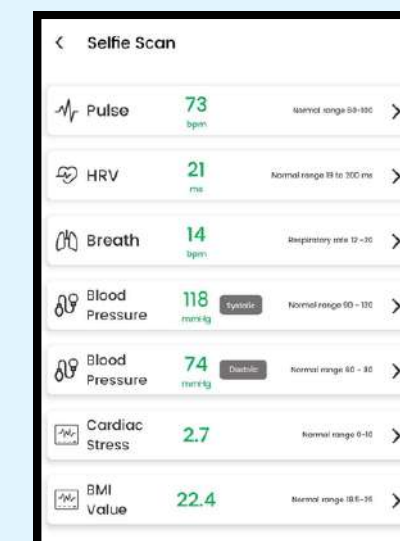
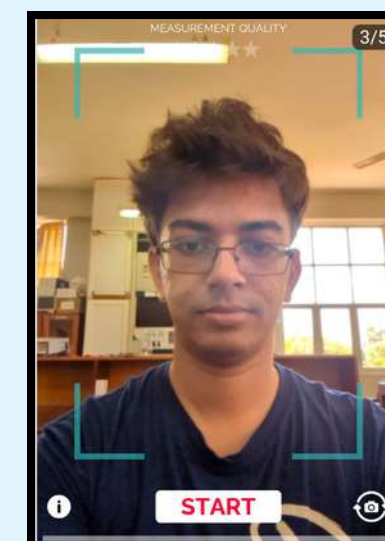
EXISTING SOLUTIONS



Bilirubinometers



Philips Lumify



Doc990 Selfie Scan by Dialog

<https://www.philips.co.uk/healthcare/resources/landing/lumifywithreacts>

<https://dialog.lk/news/dialogs-digital-health-launches-sri-lankas-first-ai-based-health-scan?language=ta>

<https://ubicomplab.cs.washington.edu/pdfs/bilicam.pdf>

DELIVERABLES

Enhance existing non-contact, video-based algorithms to accurately estimate HR, SpO₂, RR, jaundice status in neonates

Create a new dataset specifically for neonates to validate these algorithms

Mobile application for contactless monitoring of neonates

NOVELTY



First method on neonatal respiratory rate prediction using non invasive methods

First mobile app to embed several vital signs including RR, HR, SpO2 level for neonates

Creating a new dataset on neonates that supports HR, SpO2 and RR

DATA COLLECTION PROCESS



rPPG



Video signal



PPG signal , HR &
SpO2 Level



RR through Manual
Counting

Data Collection
Software

SSD Storage

Jaundice Status



Image



Jaundice Status
through Blood
Samples

Data Collection
Software

SSD Storage

DATA COLLECTION DETAILS



Description	
Total number of neonates	100
Number of videos per neonate	4
Total number of recording sessions	400
Video length per session	1 minute

- Data collection will be conducted under the supervision of Consultant Neonatologist Dr. Nishani Lucas, with the assistance of professional medical staff

NEONATE SAFETY



Use FDA approved pulseoximeter for collecting data

Connecting pulseoximeter to the neonates is done by professional medical staff under the supervision of Prof.Nishani Lucas

DATA PRIVACY



When publishing the dataset, we anonymized the neonates' videos to ensure their privacy is protected.

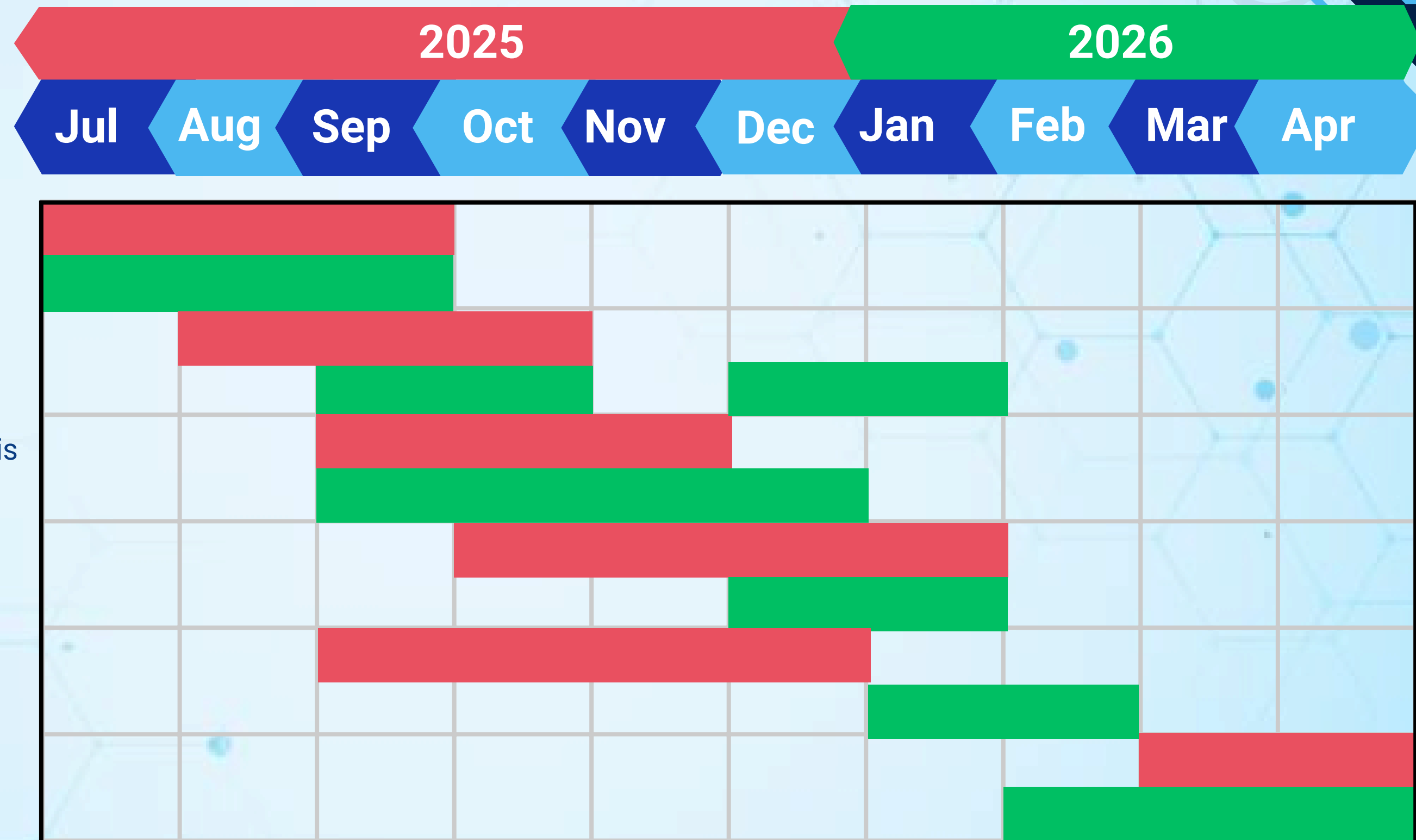
In the mobile app, before sending data to the cloud for vital sign estimation, we first anonymize it to protect patient privacy.

TIME LINE



Tasks

- Literature Review
- Ethical and Legal Clearance
- Hospital Environment investigation
- Data Acquisition
- Dataset Creation, Filtering & Analysis
- Explore Algorithm Enhancement
- Design Model Architecture
- Training and Validation
- Mobile App Development
- Mobile App Deployment
- Final Testing
- Publication Work





THANK YOU